REMARKS

Prior to this Reply, Claims 1-36 and 50-72 were pending. Through this Reply, Claims 1, 5, 8, 14, 17, 21 and 64-71 have been amended; and, Claims 73-89 have been added. Furthermore, Claims 11-13, 28 and 31-34 have been cancelled without prejudice to, or disclaimer of, the subject matter contained therein. Accordingly, Claims 1-10, 14-27, 29, 30, 35, 36 and 50-89 are now at issue in the present case.

I. Drawings

The Examiner required corrected drawings because some of the drawings are handwritten and difficult to understand. The Examiner indicated that the corrected drawings were required in order to avoid abandonment of the application.

In response, Applicants are submitting replacement Figs. 1, 2, 3, 4, 5, 6A, 6B, 7A, 7B, 8A, 8B, 9, 10, 11, 12A and 12B (contained on Replacement Sheets 1-15) to improve the quality of the drawings. Applicants note that a slight amendment has been made to Fig. 12B to correct an obvious error. Specifically, along the x-axis, the number "500" has been changed to "600." No new matter has been added.

II. Rejections Under 35 U.S.C. § 102(b)

The Examiner rejected Claims 1, 2, 4, 8-11, 21, 22, 24 and 28-31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,796,543 to Ton-That (hereinafter "Ton-That").

In response, Claim 1 has been amended to require the step of "recording at least one set of data segments onto said recording surface, each recorded data segment including a start, an end and a rotational phase from that data segment to each of the respective ones of all other data

segments in the set, wherein the data segments are recorded with coherent relative rotational phases, wherein each data segment includes one or more tracks." Applicants believe that Ton-That fails to disclose the above-quoted limitation.

Among other things, the Examiner relied on Fig. 4A and Col. 10, lines 38-45 of Ton-That to reject Claim 1. In Fig. 4A, Ton-That shows a track segment 500 including servo wedges 502 and data sectors 508. Each servo wedge 502 contains servo information that provides absolute position information to the control circuitry of the disk drive via the read element. The data sectors 508 contain a data sector identification field 507 and a series of data segments 508_1, 508_2, and 508_3 (Col. 9, lines 31-40). In Fig. 5A, Ton-That shows that each servo sector 502 includes a servo preamble 504 comprising an AGC field 512, a sync field 514, a servo address mark field 516 and an index field 518. In Col. 10, lines 38-45, Ton-That states that:

> It should be noted that servo preamble portion 504 comprising the AGC field 512, the sync field 514, the servo address mark field 516, and the index field 518 is recorded to be phase coherent from track to track throughout the radial extent of the bands of tracks, so that the MR head 202 may always read the values recorded therein irrespective of radial position. This phase coherence from track to track is diagrammed by hatching in FIG. 6A.

Therefore, phase coherence in the preamble 504 relates to the phases of flux reversals of patterns written in radially adjacent tracks, and not to data segments that "are recorded with coherent relative rotational phases," as required by Claim 1. This is clear because in Col. 10, lines 45-53, immediately following the above passage, Ton-That goes on to state that:

> Thus, the information recorded in the fields comprising the servo preamble portion 504 may be used to calibrate and normalize the gain characteristics of the read channel electronics for the following servo position information portion 506 such that the AGC field generates an electrical signal of known amplitude. During seek operations, the data amplitudes tend to vary; therefore, having a known AGC value for a servo sector interval is especially useful during track seeking operations.

Accordingly, in Ton-That, the phase coherence in the preamble 504 relates only to the phases of flux reversals of patterns in the preamble 504 written in radially adjacent tracks, which allows calibration and normalization of the gain characteristics of the read channel electronics. For example, as is well known in the art, such a phase coherency in Ton-That can be achieved through use of tri-bit encoding. With tri-bit encoding, each logical bit, such as a logical bit of a Gray-coded track ID, is represented by a codeword having three code bits, with each code bit being represented by the presence of a flux reversal (of either polarity; i.e., either a positive-polarity flux reversal ["+"] or a negative-polarity flux reversal ["-"]) or by the absence of a flux reversal ["0"]. In a representative tri-bit code, a logical 1 can be represented by either "+-+" or "-+-," and a logical 0 can be represented by either "+00" or "-00." As used in this context, phase coherence means that the first flux reversals in adjacent codewords on adjacent tracks have the same polarity.

As such, phase coherence in Ton-That is not in any way related to data segments that are: "recorded with coherent relative rotational phases," as required by Claim 1 (emphasis added). Further, Ton-That does not disclose relative rotational phases as claimed. And, the preamble portion 504 in Ton-That is not a data segment because Ton-That specifically identifies data segments as 508.

Moreover, Ton-That does not disclose that: "each data segment includes one or more tracks," as required by Claim 1. In Col. 10, lines 55-57, Ton-That states that "the servo sync field is also phase coherent from track to track throughout the radial extent of the sector." Clearly, there is no teaching in this passage, or anywhere in Ton-That, that a data segment includes one or more tracks, as claimed (see Ton-That, Fig. 4A and Col. 9, lines 31-40). And, as

discussed, phase coherence in Ton-That is not in anyway related to data segments with coherent relative rotational phase, as claimed.

For at least these reasons, Applicants believe that Claim 1 is patentably distinguishable from Ton-That. For at least the same reasons, Applicants believe that all claims that depend from Claim 1 are likewise patentably distinguishable from Ton-That.

Claim 21 was rejected for substantially the same reasons as Claim 1. For reasons similar to those presented with respect to Claim 1, Applicants submit that Claim 21, and the claims that depend therefrom, are patentably distinguishable from Ton-That.

With respect to Claims 2 and 22, Applicants submit that such claims are patentably distinguishable for reasons in addition to those presented with respect to Claim 1. In Col. 10, lines 38-45 and 55-57, Ton-That simply refers to phase coherence that relates only to the phases of flux reversals of patterns in preamble 504 written in radially adjacent tracks. And, elements A, B, C and D in Fig. 6A, which are referred to in Col. 10, lines 43-45 of Ton-That, are not data segments having coherent relative rotational phases, as claimed. Indeed, Ton-That teaches away from the claimed limitations because clearly the elements A, B, C and D in Fig. 6A have incoherent relative rotational phases. Therefore, Ton-That does not disclose coherent relative rotational phases for data segments, wherein each data segment has a relative start phase from the start of that data segment to the start of each of the respective ones of all other data segments in the set, and a relative end phase from the end of that data segment to each of the respective ones of all other data segments in the set, such that the data segments are recorded with coherent relative start phases and coherent relative end phases, as required by Claims 2 and 22. Accordingly, Applicants submit that Claims 2 and 22 (along with the claims that depend therefrom) are patentably distinguishable from Ton-That.

With respect to Claims 4 and 24, Ton-That does not disclose that for each data segment in the set: the rotational phases from that data segment to respective ones of all other data segments in the set comprise the rotational phases from the end of that data segment to the start of the respective ones of all other data segments in the set, as required by Claims 4 and 24. As discussed in relation to Claims 1 and 21, phase coherence in Ton-That is not in any way related to relative coherent rotational phases, as claimed. Further, Ton-That is silent on rotational phases and because, as discussed above, Ton-That indeed teaches away from the present invention, the claimed limitations are not inherent in Ton-That. Accordingly, Applicants submit that Claims 4 and 24 (along with all claims that depend therefrom) are patentably distinguishable from Ton-That.

With respect to Claim 50, as discussed in relation to Claim 1, Ton-That does not disclose that: "each segment includes a start, an end and a rotational phase from that segment to each of the respective ones of all other segments in the set such that the segments have coherent relative rotational phases," as required by Claim 50. Further, Ton-That does not teach: "transferring data to and from said segments on the recording surface, wherein: (1) during data storing operations in each segment, the controller controls the transducer via the servo circuit to record data in that segment, such that data is stored in the segments on the recording surface with coherent phase, and (2) during data retrieval operations from each segment, the controller controls the transducer via the servo circuit to retrieve data from each segment," as required by Claim 50.

In Col. 9, lines 19-26 and Col. 10, lines 37-42, relied upon by the Examiner to reject Claim 50, Ton-That is simply describing the well known process of reading servo information from servo wedges 502 to position the heads to read/write data from/to data segments 508. This has nothing to do with the claimed limitations. Specifically, in Col. 9, lines 19-26, Ton-That

describes reading positioning information from servo wedges 502 for head positioning for reading data from the data segments 508 with read head 202 and writing data to the data segments 508 with write head 200. The data segments 508 are not data segments with coherent relative rotations phase, as claimed. Further, in Col. 10, lines 37-42, Ton-That describes the contents of the preamble portion 504 in servo wedge 502 that are recorded therein, not writing data to data segments 508. As is well known, during disk drive read/write operations, data is not written to servo wedges 502 because such an operation would erase servo positioning information. On the one hand, the Examiner has interpreted Ton-That's data segments 508 as data segments with relative rotational phase coherence for reading data from, and on the other hand the Examiner has interpreted Ton-That's preamble 504 as data segments with relative rotational phase coherence for writing data to. Applicants disagree with these inconsistent interpretations. According to the claimed invention, data is written to, and read from, data segments with relative rotational phase coherence. For at least the above reasons, Applicants believe that Claim 50 is patentably distinguishable from Ton-That. For at least the same reasons, Applicants believe that the claims that depend from Claim 50 are likewise patentably distinguishable from Ton-That.

Claim 51 was rejected for substantially the same reasons as Claim 2. Applicants believe that Claim 51 is patentably distinguishable from Ton-That for reasons similar to those provided with respect to Claim 2.

With respect to Claim 56, as detailed above in relation to Claim 1, in Col. 10, lines 55-57, Ton-That does not disclose that: "each data segment includes one or more tracks," as required by Claim 56, wherein the data segments have relative rotational phase coherence. For at least these

reasons, Applicants submit that Claim 56, and all claims that depend therefrom, are patentably distinguishable from Ton-That.

With respect to Claim 57, Ton-That does not disclose that: "tracks in each segment in the set are offset by a predetermined skew angle, wherein said predetermined skew angle is selected to minimize rotational latency as the transducer is positioned over adjacent tracks within a segment," as required by Claim 57. In Ton-That, Col. 2, lines 38-42 and Col. 13, lines 38-50, relied upon by the Patent Office, the term "skew angle" refers to the angle between the read head 202 and the write head 200 relative to the tracks. This has nothing to do with the claimed limitation wherein the tracks in each segment are offset by a predetermined skew angle to minimize rotational latency as the transducer is positioned over adjacent tracks within a segment. The claimed skew angle is clearly described in the specification and shown in the drawings (e.g., skew angle α in Figs. 5 and 6A). It appears that the Examiner is confusing the angle between the read/write heads in Ton-That, with the skew angle herein which relates to rotational latency. For at least these reasons, Applicants submit that Claim 57, and all claims that depend therefrom, are patentably distinguishable from Ton-That.

III. Rejections Under 35 U.S.C. §103(a)

The Examiner rejected Claims 3 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 6,445,531 to Gaertner et al. (hereinafter "Gaertner"). Applicants submit that neither Ton-That, nor Gaertner, alone or in combination, disclose that for each data segment said relative start, end and rotational phases of that data segment to respective ones of all other data segments in the set are predetermined, as required by Claims 3 and 23.

The Examiner admitted that Ton-That fails to disclose that for each data segment said relative start, end and rotational phases of that data segment to respective ones of all other data segments in the set are predetermined. However, the Examiner argued that Gaertner, Col. 4, lines 55-61, teaches such limitations, and that Ton-That can be modified for the medium to have those parameters in its seek profile to determine optimum seek profile. Applicants respectfully disagree.

Gaertner is directed to a method of controlling an actuator in a disc drive to move a data head to implement an access by determining a first rotational position corresponding to a rotational position of the data head when the access will start and determining a second rotational position corresponding to a rotational position of the data head at a destination of the access. Subsequently, an access time required to move the data head from the first rotational position on a current or initial track to the second rotational position on a destination track using a fastest of multiple seek profiles is determined. A slower or slowest of the multiple seek profiles which can be used to move the data head from the first track to the second track within the access time is determined. Subsequently, the actuator is controlled using the determined slower or slowest of the multiple seek profiles to implement the access (Abstract).

In Col. 4, lines 55-61, Gaertner describes how the first rotational position is calculated based on Equation 1. Indeed, the calculation based on Equation 1 shows that the rotational position is not predetermined. Indeed, if the rotational position was predetermined there would be no need to calculate it (i.e., it would be already known). Futhermore, the calculation in Equation 1 is based on time, which varies. Even further, the rotational phase in Gaertner is the rotational position of the data head relative to data on disk, and it is not a rotational phase as claimed. By contrast, the rotational phase herein is the rotational phase, between one data

segment and another data segment on disk. Therefore, Gaertner does not disclose the claimed limitations that the Examiner purports Gaertner discloses.

Further, Ton-That is concerned with using a write-wide inductive write element and a read-narrow magneto-resistive read element within a head transducer assembly for writing and reading magnetic patterns on a rotating magnetic storage disk in a plurality of concentric tracks. A track pattern is formed in each concentric track includes embedded servo wedges wherein each wedge includes a servo position portion which is offset from a centerline of both the servo sector and a following user data sector by an amount related to offset between the inductive write and magneto-resistive elements of the head transducer assembly. Furthermore, servo bursts are arranged such that each sequential burst is offset from a previous burst by a fractional offset increment. The fractional offset increment is typically one-third of a track pitch (Abstract).

The Examiner fails to state how Ton-That can be modified to include Gaertner's apparatus for dynamically adjusting seek operations therein. Applicants do not understand the relation between placement of information in servo wedges (as described in Ton-That) with selecting seek profiles for adjusting seek operations (as described in Gaertner), and how can the purported benefit be achieved. The Examiner also does not explain how Ton-That can be modified without extensive change.

It is well settled that the reference itself must suggest the modification or combination proposed in order for the modification or combination to be valid; "[the] invention cannot be found obvious unless there was some explicit teaching or suggestion in the art to motivate one of ordinary skill to combine elements so as to create the same invention." *Winner International Royalty Corp. v. Wang*, No. 96-2107, 48 USPQ.2d 1139, 1140 (D.C.D.C. 1998) (emphasis added). "The prior art must provide one of ordinary skill in the art the motivation to make the

proposed molecular modifications needed to arrive at the claimed compound." *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941, 1944 (Fed. Cir. 1992) (emphasis added). There is no suggestion from Ton-That that it be modified as proposed by the Examiner. In fact, the Examiner fails to provide the necessary impetus for the modifications. Even if Ton-That is modified by Gaertner, as the Examiner suggests, the result would be non-functional and still fails to disclose the claimed limitations, as detailed above. For at least these reasons, Applicants believe that Claims 3 and 23 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Gaertner, both alone and in combination.

Claims 5, 6, 12, 25, 26 and 32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 5,483,393 to Mento et al. (hereinafter "Mento"). As the Examiner admitted, Ton-That fails to teach recording data segments such that for each data segment the rotational phase for that data segment relative to each of the other data segments in the set has one of a limited number of predetermined values, as required by Claim 5 and 25. However, the Examiner stated that Mento (Col. 6, lines 35-52) teaches such limitations, and it would have been obvious to modify Ton-That to have servo sectors having a predetermined rotational phase in order to better control and provide adequate timing to the circuit elements in the disc. Applicants respectfully disagree.

Mento is directed to a disk drive for use with an embedded head positioning servo system. The disk drive includes a disk on the surface of which spaced-apart servo bursts are prerecorded in servo sectors. Successive servo bursts are read by a read/write head which produces oscillating signals having variable magnitude peaks. A timing circuit provides a timing signal, synchronized with the occurrence of the servo sectors, which defines, in time, a servo signal window, during which time a servo burst is being read by the read/write head. A detector

circuit measures the magnitudes of each of the peak signals of a servo burst occurring in the servo timing window. The median peak value for a burst is stored, a next burst is detected and measured and the median peak value for that burst is stored. By comparing the median peak magnitudes of successive servo bursts, a servo error signal for use in correcting any error in head position relative to a desired track centerline is produced. The servo error signal is applied to an electrically controlled actuator which moves the read/write head (Abstract).

Mento does not disclose the claimed limitations that for each data segment the rotational phase for that data segment relative to each of the other data segments in the set has one of a limited number of predetermined values. Indeed, in Col. 6, lines 35-52, Mento specifically states that sector phase timing depends on the choice of rotational speed of the recording disk and the number of servo sectors intended for an optimum servo loop sampling rate (Col. 6, lines 43-46), both of which are variable. Mento does not disclose that there is a limited number of rotational phases, and indeed the values are unlimited. The fact that, after design choices are made, only some values fit in a circuit as the Examiner suggests, does not negate the fact that, in Mento, an unlimited number of rotational phases are possible. Further, the references fail to provide a motivation for the references to be combined, and the Examiner has not explained where such motivation can be found in the references. Even if the references are combined, the result does not disclose all of the claimed limitations, as detailed above. The Examiner does not explain how Ton-That can be modified without extensive change, and still provide a working system. The Examiner does not explain how the choice of rotational phase between servo sectors has anything to do with placement of information in servo wedges in Ton-That. For at least these reasons, Applicants submit that Claims 5 and 25 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Mento, both alone and in combination.

The Examiner rejected Claims 7, 20 and 27 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 4,864,435 to Kawakami et al. Applicants submit that the references alone or in combination do not disclose that: "for each data segment in the set the relative rotational phases from that data segment to respective ones of the other data segments in the set are the same," as required by Claims 7 and 27, or that "said relative rotational phases of that data segment to respective ones of all the other data segments in the set are predetermined independent of the start or end track of that data segment," as required by Claim 20.

The passage relied upon by the Examiner, Kawakami (Col. 17, lines 25-29), does not disclose the limitations of Claims 7, 20 or 27. In that passage, Kawakami simply states: "In more detail, generally, recording into the respective tracks of the magnetic disc 60 is performed in such a manner that the usual picture areas of the video signals in the respective tracks have the same rotational phase with one another." Regarding Claim 20, clearly in the passage, Kawakami does not even mention predetermined relative rotational phases independent of the start or end track of a data segment. With respect to Claims 7 and 27, Kawakami only states that picture areas have the same rotational phase, but Kawakami does not disclose that for each data segment in the set of data segments, the relative rotational phases from that data segment to respective ones of the other data segments in the set are the same. If Claim 7 and 27 are once again rejected, Applicants respectfully request the Examiner to explain exactly how such limitations are disclosed in the references.

Further, the references do not provide any motivation to combine them and the Examiner has not explained where such motivation can be found in the references. Even if the reference were combinable, the combination still lacks the claimed limitations, as detailed above. The

Examiner also fails to explain how Ton-That can be modified as suggested without extensive change, or how Ton-That can use picture areas of video signals in respective tracks that have the same rotational phase with one another. For at least these reasons, Applicants submit that Claims 7, 20 and 27 (and all claims that depend therefrom) are patentably distinguishable from Ton-That and Kawakami, both alone and in combination.

The Examiner rejected Claims 9, 10, 29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 6,295,176 to Reddy et al. (hereinafter "Reddy"). Neither Ton-That, nor Reddy, alone or in combination, disclose that: data tracks in data segments are offset by a predetermined skew angle, or that said predetermined skew angle is selected to minimize rotational latency as the transducer is positioned over adjacent tracks within a segment. As the Examiner admits, Ton-That fails to teach that data tracks in data segments are offset by a predetermined skew angle, as required by Claim 9 and 29. Further, despite the Examiner's contention to the contrary, Reddy (Col. 13, lines 42-47) does not disclose the claimed limitations. The track skew mentioned in Reddy is staggering or radial placement of data on tracks, from one track to another (Col. 13, lines 41-42). This has nothing to do with the claimed skew angle described in the specification and shown in the drawings (e.g., skew angle α in Figs. 5 and 6A). Accordingly, Reddy does not teach the claimed limitation. For at least the above reasons, Applicants submit that Claims 9 and 29 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Reddy.

With respect to Claims 10 and 30, Ton-That (Col. 13, lines 38-50 relied upon by Examiner) does not disclose that: data tracks in data segments are offset by a predetermined skew angle, or that said predetermined skew angle is selected to minimize rotational latency as the transducer is positioned over adjacent tracks within a segment, as required by Claims 10 and

30. As discussed above, the skew in Ton-That is that between the read/write heads, and not related to rotational phase between data segments as claimed herein. For at least these reasons, Claims 10 and 30 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Reddy.

The Examiner rejected Claims 15, 16 and 35 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 5,077,736 to Dunphy, Jr. et al. (hereinafter "Dunphy, Jr."). As the Examiner admitted, Ton-That fails to disclose receiving one or more incoming data streams and partitioning each incoming data stream into data segments before recording on the media, as required by Claim 15. Dunphy (Col. 4, lines 3-6, relied upon by the Examiner) does not disclose said limitations. In Col. 4, lines 3-6, Dunphy simply states: "In response to the associated central processing unit writing data to the disk drive memory, a control module in the disk drive memory divides the received data into a plurality (N) of segments." Clearly, there are no data streams involved or addressed in Dunphy and no steps of partitioning data streams are provided in Dunphy.

With respect to Claim 16, Applicants believe that the references do not disclose all of the limitations of such claim. Dunphy (Col. 15, lines 51-53, relied upon by the Patent Office) does not even mention data streams involved or any steps of partitioning data streams, as required by Claim 16. For at least these reasons, Claims 15 and 16 (and all claims that depend therefrom) should be allowed.

Claim 35 was rejected for the same reasons as Claim 15; however, Claim 35 includes different limitations than Claim 15, which were not addressed by the Examiner and not believed to be disclosed by the references. Accordingly, Applicants submit that Claim 35 is patentably distinguishable from Ton-That and Dunphy.

The Examiner rejected Claim 18 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Dunphy as applied to Claim 15, and further in view of Watanabe. Applicants submit that Watanabe (Col. 39, lines 6-11) does not disclose: "reading the recorded data segments from the storage media, and reformulating said one or more data streams from the read data segments," as required by Claim 18. In Col. 29, lines 6-11, Watanabe states: "The playback head 90-11a outputs a reproduced signal corresponding to data recorded in the data segments 90-2 and also outputs a reproduced signal corresponding to the clock marks 90-3, and supplies these reproduced signals through the playback amplifier 90-12 to the clock generator 90-13 and the data demodulator 90-14." As is clear, reproducing a clock signal in Watanabe has nothing to do with the claimed limitations of reformulating data streams that were partitioned into data segments when recorded. For at least these reasons, Applicants submit that Claim 18 (and all claims that depend therefrom) are patentably distinguishable from Ton-That and Watanabe.

The Examiner rejected Claims 19 and 36 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 6,208,479 to Suzuki. Applicants believe that such references, alone or in combination, do not disclose recording data segments on the storage media so as to obtain a substantially deterministic data transfer rate to and from the data storage media, as required by Claims 19 and 36. As the Examiner admits, Ton-That fails to teach the limitations of Claims 19 and 26. Applicants believe that Suzuki (Col. 2, lines 31-34, relied upon by the Examiner) does not disclose such limitations. In that passage, Suzuki states: "Although not illustrated in the figure, the circuit of FIG. 2 is connected with a clock which generates the clock frequency to determine the transfer rate of the data writing and reading operation." Thus, in Suzuki, the read/write circuit determines data transfer rate, whereas in the claimed invention

the data segments are recorded so as to obtain a substantially deterministic data transfer rate to and from the data storage media. The substantially deterministic data transfer rate, as claimed, is based on the coherent relative rotation phase of the data segments. This is not disclosed in Suzuki. Accordingly, Applicants submit that Claims 19 and 36 (and all claims that depend therefrom) are patentably distinguishable from Ton-That and Suzuki, both alone and in combination.

The Examiner rejected Claim 52 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Gaertner. Applicants believe that the references, alone or in combination, do not disclose that for each segment: "said relative start, end and rotational phases of that segment to respective ones of all other segments in the set are predetermined," as required by Claim 52. For reasons similar to those provided above in relation to Claim 3, Applicants submit that Ton-That and Gaertner do not disclose the limitations of Claim 52. Accordingly, Applicants submit that Claim 52 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Gaertner, both alone and in combination.

The Examiner rejected Claims 53, 54 and 59 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Mento. Claims 53 and 59 were rejected for substantially the same reasons as Claim 5. Accordingly, for reasons similar to those provided with respect to Claim 5, Applicants submit that Claims 53 and 59 (and the claims that depend therefrom) are patentably distinguishable from Ton-That and Mento, both alone and in combination.

The Examiner rejected Claim 55 under 35 U.S.C. §103(a) as being unpatentable over Ton-That and Mento as applied to Claim 53 and further in view of Kawakami. Claim 55 was rejected for substantially the same reasons as Claim 7. Accordingly, for reasons similar to those provided with respect to Claim 7, Applicants submit that Claim 7 (and the claims that depend

therefrom) are patentably distinguishable from Ton-That, Mento and Kawakami, alone or in combination.

The Examiner rejected Claim 60 rejected under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of U.S. Patent No. 5,596,196 to Hull et al. (hereinafter "Hull"). As the Examiner admits, Ton-That does not disclose: "one or more concentric recording zones, each recording zone including a plurality of tracks, such that at least in one recording zone each track includes the same number of segments therein," as required by Claim 60. Further, Hull (col. 3, lines 12-18, relied upon by the Patent Office) simply states: "FIG. 3 is a simplified graphical diagram of a top view of a prior art embedded servo disk surface recorded using a zone bit recording format. Concentric zones 10a, 10b, 10c are defined as shown. Zone boundaries 20 may be arbitrarily placed to increase the number of physical sectors per zone 10." However, Hull does not disclose recording zones, wherein at least in one zone each track includes the same number of segments therein. Ton-That does not disclose that several tracks include the same number of segments that have coherent relative rotational phase. Accordingly, Applicants submit that Claim 60 is patentably distinguishable from Ton-That and Hull, both alone and in combination.

The Examiner rejected Claim 61 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Kawakami. Claim 61 was rejected for essentially the same reasons as Claim 20. Accordingly, for reasons similar to those provided with respect to Claim 20, Applicants submit that Claim 61 is patentably distinguishable from Ton-That and Kawakami, both alone and in combination.

The Examiner rejected Claim 62 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Suzuki. Claim 62 was rejected for substantially the same reasons as Claim

19. Accordingly, for reasons similar to those provided with respect to Claim 19, Applicants submit that Claim 62 is patentably distinguishable from Ton-That and Suzuki, both alone and in combination.

The Examiner rejected Claim 63 under 35 U.S.C. §103(a) as being unpatentable over Ton-That in view of Gaertner. As the Examiner admits, Ton-That fails to disclose: "at least one seek profile, for generating actuator current commands based on the seek profile to perform at least one seek operation from a starting segment to a destination segment, the seek profile including constraints for the seek operation as a function of: (1) a seek distance representing the radial distance between the starting and destination segments, and (2) a seek time based at least on the relative rotational phase between the starting and destination segments," as required by Claim 63. Gaertner (Col. 6, lines 1-4 and lines 60-67, relied upon by the Examiner) describes determining a slower or slowest of the multiple seek profiles which can be used to move the data head from the first track to the second track within the access time is determined. Subsequently, the actuator is controlled using the determined slower or slowest of the multiple seek profiles to implement the access. As is clear from Gaertner, the coherent relative rotational phases of first and second data segments in selecting a seek profile, as claimed, is not utilized. For at least the above reasons, Applicants submit that Claim 63 (and all claims that depend therefrom) are patentably distinguishable from Ton-That and Gaertner.

The Examiner rejected Claims 64-66 and 68-70 under 35 U.S.C. §103(a) as being unpatentable over Ton-That and Mento as applied to Claim 54, and further in view of Gaertner. With respect to Claim 64, Gaertner does not disclose: "wherein the seek profile includes constraints as a function of the seek distance and the seek time for the seek operation, such that: (1) each seek operation is completed at the expiration of the respective seek time, and (2) for at

least one set of seek distances, the respective seek times are predetermined," as required by Claim 64. By contrast, block 440 of Fig. 2 in Gaertner (relied upon by the Examiner) states that a slower or slowest of the multiple seek profiles which can be used to move data head 160 from the current track to the destination track, within the determined access time, is then determined. As such, in Gaertner there is no teaching of a seek profile as required by Claim 64.

Regarding Claim 65, as the Examiner admits, Ton-That and Mento fail to teach that for at least a subset of the data segments, respective inter-segment seek times are the same, as required by Claim 65. Gaertner, Col. 3, lines 28-40 (relied upon by the Examiner) has nothing to do with such limitations. Claims 66, 68 and 69 add further limitations to Claim 64. Accordingly, Applicants submit that Claims 64-66, 68 and 69 (and the claims that depend therefrom) are patentably distinguishable from Ton-That, Mento and Gaertner, alone or in combination.

Claim 70 adds further limitations to Claim 63. Therefore, for reasons similar to those provided in connection with Claim 63, Applicants submit that Claim 70 is patentably distinguishable from Ton-That, Mento and Gaertner.

The Examiner rejected Claim 71 under 35 U.S.C. §103(a) as being unpatentable over Ton-That and Mento as applied to Claim 53, and further in view of Dunphy, for substantially the same reasons as Claim 15. Accordingly, for reasons similar to those provided with respect to Claim 15, Applicants submit that Claim 71 is patentably distinguishable from Ton-That, Mento and Dunphy.

The Examiner rejected Claim 67 under 35 U.S.C. §103(a) as being unpatentable over Ton-That and Gaertner, and further in view of U.S. Patent No. 5,412,809 to Tam et al. (hereinafter "Tam"). Applicants submit that Ton-That and Gaertner do not disclose all of the limitations of Claim 67. Further, Tam does not disclose that: "the controller further obtains

actuator current level and transducer motion constraints based on the seek time and the seek distance for that seek operation, and the driver applies current to the actuator as a function of at least the current level and the transducer motion constraints to complete the seek operation at the expiration of the seek time," as required by Claim 67. Tam (Col. 11, line 62 to Col. 12 line 8, relied upon by the Examiner) only discusses a disk drive circuit and method to allow the user to adopt the performance (access time) versus power consumption to meet the system requirements, which is called a power saving access time. This has nothing to do with a controller that obtains actuator current level and transducer motion constraints based on the seek time and the seek distance for a seek operation, and a driver that applies current to the actuator as a function of at least the current level and the transducer motion constraints to complete the seek operation at the expiration of the seek time, as claimed. Accordingly, for at least these reasons, Applicants submit that Claim 67 (and all claims that depend therefrom) are patentably distinguishable from Ton-That, Gaertner and Tam.

The Examiner rejected Claim 72 under 35 U.S.C. §103(a) as being unpatentable over Ton-That and Mento as applied to Claim 71, and further in view of U.S. Patent No. 6,384,998 to Price et al. (hereinafter "Price") is respectfully traversed. Ton-That and Mento do not disclose all of the limitations of Claim 71. Further, Price (Col. 5, lines 33-35) does not disclose means for combining data segments read from the storage device to reformulate one or more output data streams. In Col. 5, lines 33-35, Price only states: "The head reading the first disk storage surface 402 produces a data stream 418 having a first servo signal corresponding to the first servo track segment 410A, and a first data signal corresponding to first data segment 412A, and so forth. Similarly, the head reading the second disk surface 404 produces a data stream 420 having a second servo signal corresponding to the second servo track segment 414A, the second data

signal corresponding to the second data segment 416A, and so forth." There is no teaching of reformulating data segments to generate a data stream that was partitioned and recorded as data segments with coherent relative rotational phases. And, there is no reformulation step in Price. Accordingly, for at least these reasons, Applicants submit that Claim 72 is patentably distinguishable from Ton-That, Mento and Price, alone or in combination.

IV. New Claims

Applicants have added new Claims 73-89.

V. Additional Claim Fees

In determining whether additional claim fees are due, reference is made to the Fee Calculation Table (below).

Fee Calculation Table

	Claims Remaining After Amendment		Highest Number Previously Paid For	Present Extra	Rate	Additional Fee
Total (37 CFR 1.16(c))	68	Minus	72	= 0	x $18 =	$ 0.00
Independent (37 CFR 1.16(b))	5	Minus	4	= 1	x $86 =	$ 86.00

As set forth in the Fee Calculation Table (above), Applicants previously paid claim fees for seventy-two (72) total claims and for four (4) independent claims. Applicants hereby authorize the Commissioner to charge Deposit Account No. 50-2198 in the amount of $86.00 for the presentation of one (1) independent claim in excess of four (4). Although Applicants believe that no other fees are due, the Commissioner is also authorized to charge Deposit Account No. 50-2198 for any fee deficiencies associated with filing this paper.

VI. Conclusion

Applicants believe that the application appears to be in form for allowance. Accordingly, reconsideration and allowance thereof is respectfully requested.

The Examiner is invited to contact the undersigned at the below-listed telephone number regarding any matters relating to the present application.

Respectfully submitted,

Tejpal S. Hansra

Tejpal S. Hansra
Registration No. 38,172
Hansra Patent Services
4525 Glen Meadows Place
Bellingham, WA 98226
(360) 527-1400

Date: Feb. 18, 2004